

WHAT IS CLAIMED IS:

1. A lithium secondary battery comprising a positive
2 electrode, a negative electrode including a carbon material as an
3 active material, and a nonaqueous electrolyte comprising a solute
4 dissolved in a nonaqueous solvent in which γ -butyrolactone is the
5 main solvent, wherein the carbon material has a ratio (I_D/I_G) of a
6 Raman spectrum intensity (R) obtained by Raman spectroscopy of 0.2
7 or greater, and the nonaqueous electrolyte includes at least 0.1
8 part by weight of vinylene carbonate and at least 0.1 part by
9 weight of vinyl ethylene carbonate in 100 parts by weight of the
10 nonaqueous electrolyte.

1. 2. The lithium secondary battery according to claim 1,
2 wherein an amount of γ -butyrolactone in the nonaqueous solvent is
3 not less than 90 % by volume.

1. 3. The lithium secondary battery according to claim 1,
2 wherein an amount of γ -butyrolactone in the nonaqueous solvent is
3 not less than 95 % by volume.

1. 4. The lithium secondary battery according to claim 1,
2 wherein an amount of γ -butyrolactone in the nonaqueous solvent is
3 not less than 97 % by volume.

1 5. The lithium secondary battery according to claim 1,
2 wherein 0.1 ~ 3 parts by weight of vinylene carbonate and 0.1 ~ 8
3 parts by weight of vinyl ethylene carbonate are contained in the
4 nonaqueous electrolyte.

1 6. The lithium secondary battery according to claim 2,
2 wherein 0.1 ~ 3 parts by weight of vinylene carbonate and 0.1 ~ 8
3 parts by weight of vinyl ethylene carbonate are contained in the
4 nonaqueous electrolyte.

1 7. The lithium secondary battery according to claim 1,
2 wherein 5 % by volume of ethylene carbonate is contained in the
3 nonaqueous electrolyte.

1 8. The lithium secondary battery according to claim 2,
2 wherein 5 % by volume of ethylene carbonate is contained in the
3 nonaqueous electrolyte.